

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Original) An isolated or purified antiviral protein consisting essentially of the amino acid sequence of SEQ ID NO: 1, an amino acid sequence that is about 90% or more identical to SEQ ID NO: 1, an amino acid sequence that is about 90% or more homologous to SEQ ID NO: 1, or an antiviral fragment of any of the foregoing.
2. (Original) The isolated or purified antiviral protein of claim 1, which has been isolated or purified from *Scytonema varium*.
3. (Previously Presented) A variant of an isolated or purified antiviral protein of claim 1, wherein said variant comprises (i) one or more conservative or neutral amino acid substitutions and/or (ii) 1, 2 or 3 amino acid additions at the N-terminus and/or C-terminus, with the proviso that the variant has antiviral activity characteristic of the antiviral protein, which consists essentially of the amino acid sequence of SEQ ID NO: 1 and which is isolated or purified from *Scytonema varium*, to a greater or lesser extent but not negated.
4. (Previously Presented) A fusion protein comprising the isolated or purified antiviral protein of claim 1.
5. (Original) The fusion protein of claim 4, which comprises albumin.
6. (Original) A fusion protein comprising the variant of claim 3.
7. (Original) The fusion protein of claim 6, which comprises albumin.
8. (Previously Presented) A conjugate comprising the isolated or purified antiviral protein of claim 1 and at least one effector component.
9. (Original) The conjugate of claim 8, wherein the at least one effector component can be the same or different and is selected from the group consisting of polyethylene glycol, dextran, a toxin, an immunological reagent, an antiviral agent, and a solid support matrix.
10. (Original) A conjugate comprising the variant of claim 3.

11. (Original) The conjugate of claim 10, wherein the at least one effector component can be the same or different and is selected from the group consisting of polyethylene glycol, albumin, dextran, a toxin, an immunological reagent, an antiviral agent, and a solid support matrix.

12. (Previously Presented) A composition comprising (i) at least one isolated or purified antiviral protein of claim 1, a fusion protein thereof, and a conjugate thereof and (ii) a carrier, excipient or adjuvant therefor.

13. (Previously Presented) The composition of claim 12, wherein (i) the composition is present in an antiviral effective amount and (ii) the composition is pharmaceutically acceptable.

14. (Previously Presented) A composition comprising (i) at least one variant of claim 3, a fusion protein thereof, and a conjugate thereof and (ii) a carrier, excipient or adjuvant therefor.

15. (Original) The composition of claim 14, wherein (i) is present in an antiviral effective amount and the composition is pharmaceutically acceptable.

16. (Previously Presented) An isolated or purified nucleic acid consisting essentially of a nucleotide sequence encoding the protein of claim 1, optionally in the form of a vector.

17. (Currently Amended) The isolated or purified nucleic acid of claim 16, wherein the nucleic acid encodes the amino acid sequence of SEQ ID NO: 1. ~~is isolated or purified from *Scytonema varium*.~~

18. (Previously Presented) A variant of the isolated or purified nucleic acid of claim 16, wherein the variant comprises nucleotides encoding (i) one or more conservative or neutral amino acid substitutions and/or (ii) up to 1, 2 or 3 amino acid additions at the N-terminus and/or C-terminus, with the proviso that the encoded amino acid sequence has antiviral activity characteristic of the antiviral protein, which consists essentially of the amino acid sequence of SEQ ID NO: 1 and which is isolated or purified from *Scytonema varium*, to a greater or lesser extent but not negated, optionally in the form of a vector.

19. (Original) An isolated or purified nucleic acid consisting essentially of a nucleotide sequence encoding the fusion protein of claim 4, optionally in the form of a vector.

20. (Original) An isolated or purified nucleic acid consisting essentially of a nucleotide sequence encoding the fusion protein of claim 6, optionally in the form of a vector.

21. (Previously Presented) An isolated cell comprising the isolated or purified nucleic acid of claim 16.

22. (Original) The isolated cell of claim 21, which is a bacterium or a yeast.

23. (Original) The isolated cell of claim 22, wherein the bacterium is lactobacillus.

24. (Original) An isolated cell comprising the variant of claim 18.

25. (Original) The isolated cell of claim 24, which is a bacterium or a yeast.

26. (Original) The isolated cell of claim 25, wherein the bacterium is a lactobacillus.

27. (Original) An isolated cell comprising the isolated or purified nucleic acid of claim 19.

28. (Original) The isolated cell of claim 27, which is a bacterium or a yeast.

29. (Original) The isolated cell of claim 28, wherein the bacterium is a lactobacillus.

30. (Original) An isolated cell comprising the isolated or purified nucleic acid of claim 20.

31. (Original) The isolated cell of claim 30, which is a bacterium or a yeast.

32. (Original) The isolated cell of claim 31, wherein the bacterium is a lactobacillus.

33. (Previously Presented) A composition comprising (i) the isolated or purified nucleic acid of claim 16, optionally as part of an encoded fusion protein, and (ii) a carrier, excipient or adjuvant therefor.

34. (Original) The composition of claim 33, wherein (i) is present in an antiviral effective amount and the composition is pharmaceutically acceptable.

35. (Original) A composition comprising (i) the variant of claim 18, optionally as part of an encoded fusion protein, and (ii) a carrier, excipient or adjuvant therefor.

36. (Original) The composition of claim 35, wherein (i) is present in an antiviral effective amount and the composition is pharmaceutically acceptable.

37. (Previously Presented) A method of inhibiting a viral infection of a host, which method comprises administering a viral infection-inhibiting amount of at least one of the following:

- i. an isolated or purified antiviral protein of claim 1,
- ii. a variant of (i), which comprises (a) one or more conservative or neutral amino acid substitutions and/or (b) 1, 2 or 3 amino acid additions at the N-terminus and/or C-terminus, with the proviso that the variant has antiviral activity characteristic of the antiviral protein consisting essentially of the amino acid sequence of SEQ ID NO: 1 and isolated or purified from *Scytonema varium* to a greater or lesser extent but not negated,
- iii. a fusion protein of (i),
- iv. a fusion protein of (ii),
- v. a conjugate comprising (i) and at least one effector component,
- vi. a conjugate comprising (ii) and at least one effector component,
- vii. a composition comprising one or more of (i)-(vi),
- viii. an isolated or purified nucleic acid consisting essentially of a nucleotide sequence encoding the amino acid sequence of claim 1 or an antiviral fragment of any of the foregoing, optionally in the form of a vector,
- ix. a variant of (viii), which comprises nucleotides encoding (a) one or more conservative or neutral amino acid substitutions and/or (b) up to 1, 2 or 3 amino acid additions at the N-terminus and/or C-terminus, with the proviso that the encoded amino acid sequence has antiviral activity characteristic of the antiviral protein, which consists

essentially of the amino acid sequence of SEQ ID NO: 1 and which is isolated or purified from *Scytonema varium*, optionally in the form of a vector,

x. an isolated or purified nucleic acid consisting essentially of a nucleotide sequence encoding a fusion protein of (viii), optionally in the form of a vector,

xi. an isolated or purified nucleic acid consisting essentially of a nucleotide sequence encoding a fusion protein of (ix), optionally in the form of a vector,

xii. a composition comprising one or more of (viii)-(xi), and

xiii. an isolated cell comprising (viii), (ix), (x), or (xi),

which method optionally further comprises the prior, simultaneous or subsequent administration, by the same route or a different route, of an antiviral agent or another agent that is efficacious in inhibiting the viral infection,

whereupon the viral infection is inhibited.

38. (Original) The method of claim 37, wherein the viral infection is caused by a virus having a glycoprotein comprising a high-mannose oligosaccharide as a coat protein.

39. (Original) The method of claim 38, wherein the virus is an immunodeficiency virus.

40. (Original) The method of claim 37, wherein the host is a human and the immunodeficiency virus is human immunodeficiency virus (HIV).

41. (Previously Presented) The method of claim 37, wherein the fusion protein comprises albumin.

42. (Previously Presented) The method of claim 37, wherein the at least one effector component can be the same or different and is selected from the group consisting of polyethylene glycol, dextran, a toxin, an immunological reagent, an antiviral agent, and a solid support matrix.

43. (Previously Presented) The method of claim 37, wherein the isolated cell is a cell from the host, which had been previously isolated and contacted with (viii), (ix), (x) or (xi).

44. (Previously Presented) The method of claim 37, wherein the isolated cell is a cell from a homologous host.

45. (Previously Presented) The method of claim 37, wherein the isolated cell is a nonpathogenic bacterium or a yeast.

46. (Original) The method of claim 45, wherein the nonpathogenic bacterium is a lactobacillus.

47. (Previously Presented) A method of inhibiting a virus in a biological sample or in/on an inanimate object, which method comprises contacting the biological sample or the inanimate object with a viral-inhibiting amount of at least one of the following:

- i. an isolated or purified antiviral protein of claim 1,
- ii. a variant of (i), which comprises (a) one or more conservative or neutral amino acid substitutions and/or (b) 1, 2 or 3 amino acid additions at the N-terminus and/or C-terminus, with the proviso that the variant has antiviral activity characteristic of the antiviral protein, which consists essentially of the amino acid sequence of SEQ ID NO: 1 and which is isolated or purified from *Scytonema varium*, to a greater or lesser extent but not negated,
- iii. a fusion protein of (i),
- iv. a fusion protein of (ii),
- v. a conjugate comprising (i) and at least one effector component,
- vi. a conjugate comprising (ii) and at least one effector component, and
- vii. a composition comprising one or more of (i)-(vi),

which method optionally further comprises the prior, simultaneous or subsequent contacting, in the same manner or in a different manner, of the biological sample or inanimate object with an antiviral agent or another agent that is efficacious in inhibiting the virus,

whereupon the virus is inhibited.

48. (Original) The method of claim 47, wherein the biological sample is blood, a blood product, cells, a tissue, an organ, sperm, a vaccine formulation, or a bodily fluid.

49. (Original) The method of claim 47, wherein the inanimate object is a solution, a medical supply, or a medical equipment.

50. (Previously Presented) The method of claim 47, wherein the fusion protein comprises albumin.

51. (Previously Presented) The method of claim 47, wherein the at least one effector component can be the same or different and is selected from the group consisting of

polyethylene glycol, dextran, a toxin, an immunological reagent, an antiviral agent, and a solid support matrix.

52. (Previously Presented) An antibody that binds to a protein of claim 1.

53. (Previously Presented) The antibody of claim 52, wherein the protein consists essentially of SEQ ID NO: 1 and the antibody binds to an epitope of SEQ ID NO: 1.

54. (Previously Presented) The antibody of claim 53, wherein the protein has been purified or isolated from *Scytonema varium*.

55. (Previously Presented) A composition comprising the antibody of claim 52.

56. (Canceled)

57. (Currently Amended) The antibody of claim 52, which has an internal image of gp120 of an human immunodeficiency virus (HIV).

58. (Previously Presented) A composition comprising the antibody of claim 52.

59. (Original) The composition of claim 58, which further comprises an immunostimulant.

60. (Previously Presented) A method of inhibiting infection of a mammal with a virus, which method comprises:

administering to the mammal the antibody of claim 52, or a composition comprising same, in an amount sufficient to induce in the mammal an immune response to the virus,
which method optionally further comprises the prior, simultaneous or subsequent administration, by the same or a different route, of an antiviral agent or another agent that is efficacious in inducing an immune response to the virus,
whereupon the infection of the mammal with the virus is inhibited.

61. (Previously Presented) The method of claim 60, wherein the antibody has an internal image of gp120 of an immunodeficiency virus.

62. (Previously Presented) The method of claim 60, which further comprises the administration of an immunostimulant.

63. (Previously Presented) The method of claim 61, which further comprises the administration of an immunostimulant.

64. (Currently Amended) The method of ~~any of~~ claim 39, wherein the fusion protein comprises albumin.

65. (Currently Amended) The method of ~~any of~~ claim 39, wherein the at least one effector component can be the same or different and is selected from the group consisting of polyethylene glycol, dextran, a toxin, an immunological reagent, an antiviral agent, and a solid support matrix.

66. (Previously Presented) The method of claim 39, wherein the isolated cell is a cell from the host, which had been previously isolated and contacted with (viii), (ix), (x) or (xi).

67. (Previously Presented) The method of claim 39, wherein the isolated cell is a cell from a homologous host.

68. (Previously Presented) The method of claim 39, wherein the isolated cell is a nonpathogenic bacterium or a yeast.

69. (Previously Presented) The method of claim 40, wherein the fusion protein comprises albumin.

70. (Previously Presented) The method of claim 40, wherein the at least one effector component can be the same or different and is selected from the group consisting of polyethylene glycol, dextran, a toxin, an immunological reagent, an antiviral agent, and a solid support matrix.

71. (Previously Presented) The method of claim 40, wherein the isolated cell is a cell from the host, which had been previously isolated and contacted with (viii), (ix), (x) or (xi).

72. (Previously Presented) The method of claim 40, wherein the isolated cell is a cell from a homologous host.

73. (Previously Presented) The method of claim 40, wherein the isolated cell is a nonpathogenic bacterium or a yeast.

74. (Previously Presented) The method of claim 37, wherein the viral infection is an influenza infection.

75. (Previously Presented) The method of claim 37, wherein the viral infection is an Ebola infection.

76. (Previously Presented) The method of claim 37, wherein the host is an avian host.

77. (Previously Presented) The method of claim 37, wherein at least one of (i)-(xiii) is administered nasally, by inhalation, or by parenteral administration.